WE CLAIM

1.   A common interface controller for use in a digital television device having a connector for a selectively attachable conditional access module for descrambling channels of a transport stream as identified by respective PIDs; the common interface
5   controller including:

a first input interface for a first transport stream having a first channel identifiable by one or more first PIDs;

a conditional access interface for transmitting to a conditional access module transport streams having scrambled channels and for receiving from the conditional
10   access module transport streams having descrambled channels; wherein the common interface controller further includes:

a second input interface for a second transport stream having a second channel identifiable by one or more second PIDs;

a forward multiplexer for providing an intermediate data stream by time
15   multiplexing at least a part of the first transport stream with at least a part of the second transport stream, the part of the first transport stream including the first channel and the part of the second transport stream including the second channel; and

a PID remapper for changing the original values of the second PIDs to intermediate values not used by any PID of said at least a part of the first transport
20   stream such that said intermediate data stream forms an intermediate transport stream, the conditional access interface being arranged to transmit the intermediate transport stream to a conditional access module for descrambling of at least the first channel and the second channel.

2.   A common interface controller according to claim 1 wherein:
25   the PID remapper is arranged to change the original values of each PID of the channels in said at least a part of the second transport stream to respective intermediate values not used by any PID of said at least part of the first transport stream.

3.   A common interface controller according to claim 1 further including:
30   a return demultiplexer for receiving from the conditional access interface the intermediate transport stream descrambled by a conditional access module and for

separating said at a least part of the first transport stream from said at least a part of the second transport stream.

4.   A common interface controller according to claim 3 further including:

a PID demapper for changing the intermediate values of the one or more second PIDs, as received by the conditional access interface from a conditional access module, back to their original values.

5.   A common interface controller according to claim 3 wherein:

the PID demapper is arranged to change the intermediate values of each PID of the channels in said at least a part of the second transport stream, as received by the conditional access interface from a conditional access module, back to the respective original values.

6.   A common interface controller according to claim 4 further including:

a secondary return multiplexer for receiving from the return demultiplexer said at least a part of the second transport stream, as changed by the PID demapper, and for multiplexing at least a part of the received at least a part of the second transport stream with the remaining data of the second transport stream so as to output the second transport stream having the second channel descrambled.

7.   A common interface controller according to claim 6 further including:

a secondary buffer for storing at least those parts of the second transport stream not forming said at least a part of the second transport stream and for use by the secondary return multiplexer.

8.   A common interface controller according to claim 7 wherein:

said at least a part of the second transport stream includes Table Information for the second transport stream and the secondary buffer is arranged to store the Table Information for use by the secondary return multiplexer.

9.   A common interface controller according to claim 3 further including:

a primary return multiplexer for receiving from the return demultiplexer said at least a part of the first transport stream and for multiplexing the received at least a part of the first transport stream with the remaining data of the first transport stream so as to output the first transport stream having the first channel descrambled.

10.   A common interface controller according to claim 9 further including:

a primary buffer for storing at least those parts of the first transport stream not forming at least a part of the first transport stream and for use by the primary return demultiplexer.

11.   A common interface controller according to claim 10 wherein:

said at least a part of the first transport stream includes the Table Information for the first transport stream and the primary buffer is arranged to store the Table Information for use by the primary return multiplexer.

12.   A common interface controller according to claim 1 further including:

a primary forward demultiplexer for receiving the first transport stream from the first input interface, separating from the first transport stream said at least a part of the first transport stream and outputting said at least a part of the first transport stream to the forward multiplexer.

13.   A common interface controller according to claim 1 further including:

a secondary forward demultiplexer for receiving the second transport stream from the second input interface, separating from the second transport stream said at least a part of the second transport stream and outputting said at least a part of the second transport stream.

14.   A common interface controller according to claim 13 wherein:

the PID remapper is connected between the secondary forward demultiplexer and the forward multiplexer.

15.   A common interface controller according to claim 1 further including:

a command interface for communication with a conditional access module.

16.   A digital television device including a connecter for a selectively attachable conditional access module for descrambling channels of a transport stream and further including:

a common interface controller for use in a digital television device having a connector for a selectively attachable conditional access module for descrambling channels of a transport stream as identified by respective PIDs; the common interface controller including:

a first input interface for a first transport stream having a first channel identifiable by one or more first PIDs;

a conditional access interface for transmitting to a conditional access module transport streams having scrambled channels and for receiving from the conditional access module transport streams having descrambled channels; wherein the common interface controller further includes:

5   a second input interface for a second transport stream having a second channel identifiable by one or more second PIDs;

a forward multiplexer for providing an intermediate data stream by time multiplexing at least a part of the first transport stream with at least a part of the second transport stream, the part of the first transport stream including the first

10   channel and the part of the second transport stream including the second channel; and

a PID remapper for changing the original values of the second PIDs to intermediate values not used by any PID of said at least a part of the first transport stream such that said intermediate data stream forms an intermediate transport stream, the conditional access interface being arranged to transmit the intermediate

15   transport stream to a conditional access module for descrambling of at least the first channel and the second channel.

17.   A digital television device according to claim 16 wherein the device is one of a digital television receiver, a digital TV tuner board for a personal computer and a Personal Video Recorder.

20   18.   A digital television device according to claim 16 in combination with one or more conditional access modules selectively attachable to said connector.

19.   A method of descrambling channels of first and second transport streams using a conditional access module for descrambling channels of a transport stream as identified by respective PIDs, the method including:

25   providing an intermediate data stream by time multiplexing at least a part of the first transport stream with at least a part of the second transport stream, the part of the first transport stream including a first channel and the part of the second transport stream including a second channel; and

changing the original value of one or more PIDs identifying the second

30   channel to an intermediate value not used by any PID of said at least a part of the first

transport stream such that the intermediate data stream forms an intermediate transport stream for processing by the conditional access module.